US007918395B2

(12) **United States Patent**
Gelbman

(10) **Patent No.: US 7,918,395 B2**
(45) **Date of Patent: *Apr. 5, 2011**

(54) **ELECTRONIC PRODUCT IDENTIFICATION AND PRICE DISPLAY SYSTEM EMPLOYING ELECTRONIC-INK DISPLAY LABELS HAVING A STACKED ARCHITECTURE FOR VISUALLY DISPLAYING THE PRICE AND/OR PROMOTIONAL INFORMATION FOR SAID CONSUMER PRODUCT, REMOTELY UPDATED BY ONE OR MORE REMOTE ACTIVATOR MODULES INSTALLED WITHIN THE RETAIL ENVIRONMENT**

(75) Inventor: **Alexander Gelbman**, Mountain Lakes, NJ (US)

(73) Assignee: **Metrologic Instruments, Inc.**, Blackwood, NJ (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **12/154,681**

(22) Filed: **May 23, 2008**

(65) **Prior Publication Data**

US 2008/0314991 A1 Dec. 25, 2008

Related U.S. Application Data

(63) Continuation of application No. 11/196,776, filed on Aug. 2, 2005, now abandoned, which is a continuation of application No. 09/393,553, filed on Sep. 10, 1999, now Pat. No. 6,924,781.

(60) Provisional application No. 60/099,888, filed on Sep. 11, 1998.

(51) **Int. Cl.**
G06K 7/08 (2006.01)

(52) **U.S. Cl.** **235/451**; 235/383; 235/375; 235/492; 235/385; 340/5.91

(58) **Field of Classification Search** 235/383, 235/375, 451, 492, 385; 340/5.91
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,668,106 A 6/1972 Ota
(Continued)

FOREIGN PATENT DOCUMENTS

EP 1058147 A2 12/2000
(Continued)

OTHER PUBLICATIONS

Chiang, A., et al., "A Stylus Writable Electrophoretic Display Device", SID 79 Digest (1979), 4.
(Continued)

Primary Examiner — Michael G. Lee
Assistant Examiner — Kristy A Haupt
(74) *Attorney, Agent, or Firm* — Thomas J. Perkowski, Esq., P.C.

(57) **ABSTRACT**

An electronic product identification price display system for installation in a retail environment storing a plurality of consumer products on shelves. The system includes a plurality of remote activator modules installed within the retail environment, and a plurality of remotely-updateable electronic-ink labels applied to consumer products stored in the retail environment. Each remote activator module sends and transmits electromagnetic signals within the space of the retail environment. Each electronic-ink label employs an addressable display assembly including a layer of electronic ink including a bi-stable non-volatile imaging material. The device includes an integrated circuit structure having a storage element for storing instructions, programs and data, and a programmed processor in communication with storage element. A signal transmitting structure transmits signals from the antenna structure to the remote activator modules. A signal receiving structure receives electromagnetic signals from the remote activator modules, using the antenna structure. An on-board battery power structure, operably connected to the integrated circuit structure, supplies electrical power to the integrated circuit structure. The electronic-ink label applied to each consumer product displays graphical indicia representing the price and/or promotional information for the consumer product, that is remotely updated by one or more remote activator modules installed within the retail environment.

28 Claims, 7 Drawing Sheets